

Community Affairs File
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State Park Guide 9

GEOLOGIC STORY OF BROWN COUNTY STATE PARK

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STATE OF INDIANA
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY

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INTRODUCTION

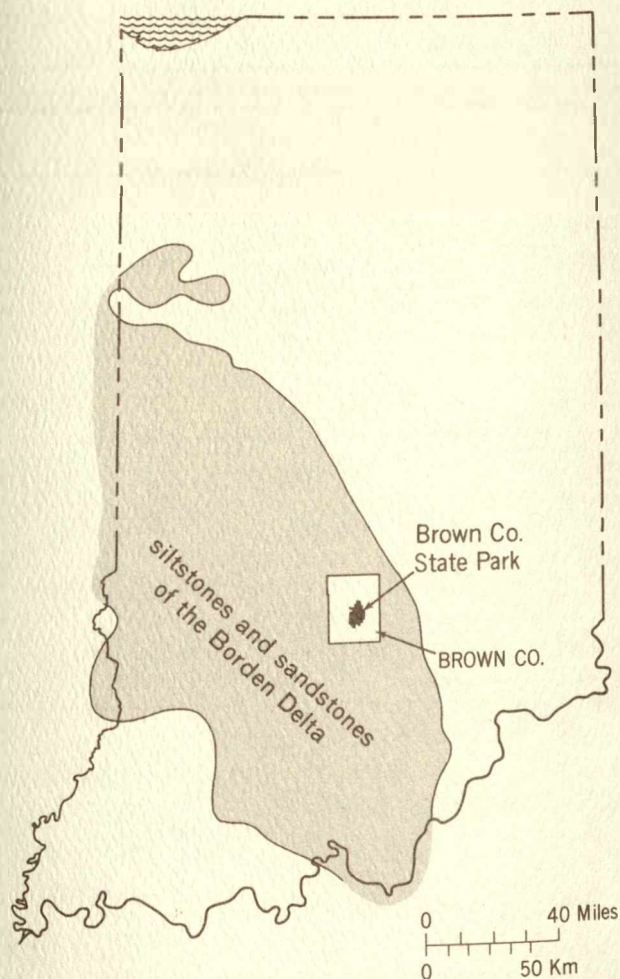
Winding roads through the densely wooded hills of Brown County, punctuated by breathtaking vistas of the deeply entrenched Salt Creek valley system, make Brown County State Park one of the most beautiful recreation areas in Indiana. The geologic story of this scenic area is summarized here in the hope that it will enhance the visitor's appreciation of this truly unique park.

THE BEDROCK

The ridges, valleys, and stately hills of the park were carved from sedimentary rocks that formed more than 250 million years ago. During a part of the geologic past known as the Mississippian Period, most of southern Indiana was covered by a shallow inland sea. Sand and silt probably derived from parts of what is now New York and Ontario were carried into this shallow sea by a river system and were deposited as a vast delta complex. The delta formed in about the same way as the present Mississippi River delta in the Gulf of Mexico. In time, the finely laminated delta deposits were hardened into sandstone and siltstone by the weight of overlying sediments and internal chemical reactions. Geologists have classified the rocks exposed in the park as belonging to the Edwardsville and Carwood Formations of the Borden Group.

Evidence from nearby localities indicates that the deltaic rocks in this area were later covered by an additional 1,000 feet or more of limestone and other types of sedimentary rock. All record of these younger formations has been lost to erosion, however, as you will discover later in this story.

Many park visitors will probably notice the multicolored bands that appear on the surface of bedrock outcrops. These tinted laminae receive their color in part from iron compounds deposited by ground water that flowed through the pore spaces of the sandstone. The color banding is also due to the accumulated layered sediments that are composed of microscopic mineral particles of varying color and size. (Particle-size variation imparts apparent color differences even to identical minerals.)



Present distribution of deltaic siltstone and sandstone of Mississippian age in Indiana



View northward from Hohen Point



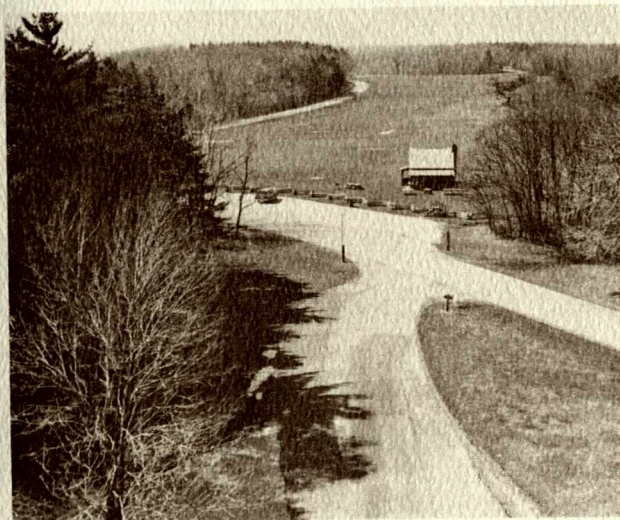
Borden rocks exposed along Strahl Creek

THE CHANGING LANDSCAPE

After bedrock was deposited in this area, regional uplift of the landmass took place. Exposed to weathering and running water, the soft, easily eroded limestones and shales wore away with passing ages to form the symmetrical hills and valleys typical of this area. In some places the more resistant sandstone layers within the youngest deltaic formation (Edwardsville Formation) acted like armor plate by protecting the rocks beneath them from the downwasting power of erosion. Weed Patch Hill, parts of Limekiln Ridge, and Hohen Point are typical hills capped by sandstone, and rising more than 1,000 feet above sea level, they remain as relics of an ancient land surface that has persisted for millions of years. The marked symmetry of the hills and valleys, as viewed from Hesitation and Hohen Points, is due to the homogeneous composition of most of the bedrock, the nearly horizontal bedding surfaces of the Borden rocks, and the later uniform effects of stream erosion.

UNTOUCHED BY THE GLACIERS

Although the continental glaciers of the Ice Age did not actually reach Brown County State Park, their presence north and east of the park was reflected by increased erosion and the loading of local valleys with glacial



View from Weed Patch Hill Lookout Tower

debris. Since the beginning of the Ice Age more than 2.5 million years ago, the glaciers several times advanced into southern Indiana, but it was during one of the earlier glaciations (called the Illinoian) that the ice came closest to the area including the park. Outwash from the melting ice sheet flowed down Salt Creek and some of its tributaries and left behind sand and gravel deposits. Some sediments in these deposits had been transported many hundreds of miles by the slowly moving ice. All that remains of the outwash are scattered terrace remnants along the north fork of Salt Creek, an area that is almost entirely outside the park. An example of a remnant outwash terrace can be seen in the valley wall of Salt Creek near the north entrance. The effect of meltwaters in eroding sediments was dominant in the most recent deepening and shaping phase of the Salt Creek valley system.

Therefore the geologic story of Brown County State Park, the form of the deeply carved valleys and sinuous ridges, is largely an account of the erosive power of running water on ancient rocks that were themselves born of soil and rock eroded long ago from another landscape in another time. By human standards, the hills of Brown County seem everlasting, but in fact they are only momentary features in the history of the changing earth.

John R. Hill, Glacial Geologist
Photographs by George R. Ringer

MAP OF BROWN COUNTY STATE PARK BROWN COUNTY, INDIANA

